


# Unintentional Injuries in Children and Youth





**“If a disease were killing our children at the rate unintentional injuries are, the public would be outraged and demand that this killer be stopped.”**

**C. Everett Koop, MD, ScD  
Former US Surgeon General  
Chairman, The National  
SAFE KIDS Campaign**



# Accidents vs. Unintentional Injuries

- Accidents = implies that they are due to chance.
- Unintentional injuries = characterizes the event as predictable and preventable if safety measures are implemented.



# Why are unintentional injuries important?

# 10 Leading Causes of Death by Age Group, 2002

Rank	Age Groups										Total
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Congenital Anomalies 5,623	Unintentional Injury 1,641	Unintentional Injury 1,176	Unintentional Injury 1,542	Unintentional Injury 15,412	Unintentional Injury 12,569	Unintentional Injury 16,710	Malignant Neoplasms 48,637	Malignant Neoplasms 93,391	Heart Disease 576,301	Heart Disease 696,947
2	Short Gestation 4,637	Congenital Anomalies 530	Malignant Neoplasms 537	Malignant Neoplasms 535	Homicide 5,219	Suicide 5,046	Malignant Neoplasms 16,085	Heart Disease 37,570	Heart Disease 64,234	Malignant Neoplasms 391,001	Malignant Neoplasms 557,271
3	SIDS 2,295	Homicide 423	Congenital Anomalies 199	Suicide 260	Suicide 4,010	Homicide 4,489	Heart Disease 13,688	Unintentional Injury 14,675	Chronic Low. Respiratory Disease 11,280	Cerebrovascular 143,293	Cerebrovascular 162,672
4	Maternal Pregnancy Comp. 1,708	Malignant Neoplasms 402	Homicide 140	Congenital Anomalies 218	Malignant Neoplasms 1,730	Malignant Neoplasms 3,872	Suicide 6,851	Liver Disease 7,216	Diabetes Mellitus 10,022	Chronic Low. Respiratory Disease 108,313	Chronic Low. Respiratory Disease 124,816
5	Placenta Cord Membranes 1,028	Heart Disease 165	Heart Disease 92	Homicide 216	Heart Disease 1,022	Heart Disease 3,165	HIV 5,707	Suicide 6,308	Cerebrovascular 9,897	Influenza & Pneumonia 58,826	Unintentional Injury 106,742
6	Unintentional Injury 946	Influenza & Pneumonia 110	Benign Neoplasms 44	Heart Disease 163	Congenital Anomalies 492	HIV 1,839	Homicide 3,239	Cerebrovascular 6,055	Unintentional Injury 8,345	Alzheimer's Disease 58,289	Diabetes Mellitus 73,249
7	Respiratory Distress 943	Septicemia 79	Septicemia 42	Chronic Low. Respiratory Disease 95	Chronic Low. Respiratory Disease 192	Diabetes Mellitus 642	Liver Disease 3,154	Diabetes Mellitus 5,496	Liver Disease 6,097	Diabetes Mellitus 54,715	Influenza & Pneumonia 65,681
8	Bacterial Sepsis 749	Chronic Low. Respiratory Disease 65	Chronic Low. Respiratory Disease 41	Cerebrovascular 58	HIV 178	Cerebrovascular 567	Cerebrovascular 2,425	HIV 4,474	Suicide 3,618	Nephritis 34,316	Alzheimer's Disease 58,866
9	Circulatory System Disease 667	Perinatal Period 65	Influenza & Pneumonia 38	Influenza & Pneumonia 53	Cerebrovascular 171	Congenital Anomalies 475	Diabetes Mellitus 2,164	Chronic Low. Respiratory Disease 3,475	Nephritis 3,455	Unintentional Injury 33,841	Nephritis 40,974
10	Intrauterine Hypoxia 583	Benign Neoplasms 60	Cerebrovascular 33	Septicemia 53	Diabetes Mellitus 171	Liver Disease 374	Chronic Low. Respiratory Disease 1,008	Viral Hepatitis 2,331	Septicemia 3,360	Septicemia 26,670	Septicemia 33,665

Source: National Vital Statistics System, National Center for Health Statistics, CDC.

Produced by: Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.




# Some Sobering Statistics

- Fifth leading cause of death overall
- Unintentional injuries are the leading cause of death in ages 1-18 (Hovert 2005)

# The Costs of Childhood and Youth Unintentional Injury

- \$14 billion in lifetime medical spending
- \$1 billion in other resource costs
- \$66 billion in present and future work issues
- Medicaid and government sources paid for 39% of all days spent in the hospital by children.
  - An argument for putting more funds into this important public health topic.

Source: Miller et al.



**"If some infectious disease came along that affected children [in the proportion that injuries do], there would be a huge public outcry and we would be told to spare no expense to find a cure and to be quick about it."**

-Statement by Surgeon General C. Everett Koop before the Subcommittee on Children, Family, Drugs, and Alcoholism, U.S. Senate, February 9, 1989

# Types of Unintentional Injuries

Fires



Motor Vehicle Accidents (MVAs)



Drownings

Poisonings

Playground Injuries



Burns



# Motor Vehicle Accidents

- Leading cause of death among children and youth
- A daily average of 4 deaths and 602 injuries among children 14 or younger (NHTSA 2004a)
- Of those killed in MVAs during 2003, more than ½ were unrestrained (NHTSA 2004a)
- 1 out of 4 occupant deaths among kids 0-14 involve a drunk driver.
  - More than 2/3 ride with the drunk driver (Shults 2004)
- Survey of 17,500+ children found 15% incorrectly harnessed (Taft 1999)

# Teen Drivers

- 2 out of 5 deaths among US teens from MVA (CDC 2004)
- Teens represent 10% of population, but make up 14% of all motor vehicle related deaths (IIHS 2004)
- Estimated cost of police-reported crashes (fatal and non-fatal) for drivers aged 15-20 = \$40.8 billion
- Compared with other age groups, teens have the lowest rate of seat belt use.
  - 2003 – 18% of high school students reported they rarely or never wear seat belts when riding with someone else.

# Bicycle Safety

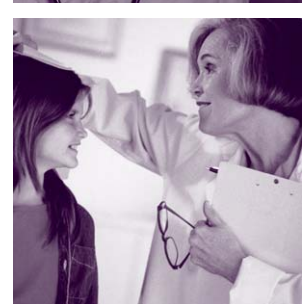
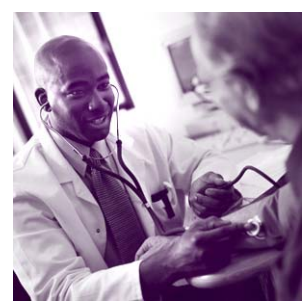
- Children 0-14 y.o. accounted for 21% of pedal cyclists killed in MVA in 2003 (NHTSA 2003)
- Bicycle helmets are 85 to 88% effective with regards to head injuries and fatalities from bicycle crashes (Thompson)

# Water Safety

- Drowning is still the 2<sup>nd</sup> leading cause of injury related death for kids 1-14 (CDC 2003)
  - Most drownings occur in residences (Brenner et al, 2001)
- For every child that drowns, 3 ER visits occur for non-fatal submersion injuries
  - >40% require hospitalization (CDC 2003)
- Consequences:
  - Memory problems
  - Learning disabilities
  - Permanent loss of basic functioning

# Playground Injuries

- >200,000 children 14 and younger treated
- 45% are severe injuries (Tinsworth, 2001)
  - Fractures and dislocations
  - Internal injuries
  - Concussions



# Poisonings

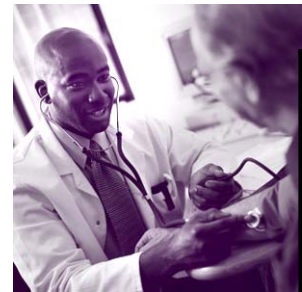
- Ingestion of cosmetics, personal care products, cleaning substances, pain relievers, foreign bodies, and plants (Litovitz, 2001)
- 52.7% of all poisonings occurred among children <6 y.o. (Litovitz, 2001)

# Haddon Phase-Factor Matrix: A Public Health Framework

	Host Factors	Agent Factors	Physical Environment	Socio-cultural Environment
Pre-Event				
Event				
Post-Event				



# Applying the Haddon Matrix: Motor Vehicle Accident



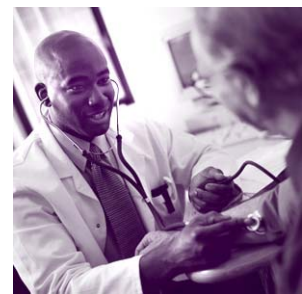
	Host Factors	Agent Factors	Physical Environment	Socio-Cultural Environment
Pre – Event	Driver age, experience, alcohol	Speed of travel, conditions of tires and brakes	Weather, roadway type, type of signs, signals	Norms about drinking and driving, graduated licensing
Event	Seatbelt use, seating position in vehicle	Vehicle size, airbags, bumper types	Guardrails, road medians, shoulders	Laws for occupant restraint use, level of law enforcement
Post – Event	Age of Victim, general health status	Fuel system protection	EMS response type and timing, rehab programs	Funding for trauma care systems, standards for EMS



Source: Staniland N. "Injury Prevention and Control: Understanding the Issues and Making a Difference." International Journal of Trauma Nursing, April – June 2001, pp. 67-69.

# Phases of Injury Prevention

1. Reducing the number of events with the potential to cause injury.
2. Reducing the number of injuries that occur.
3. Reducing the severity of injury and optimizing outcomes.



# What's happening now in the field of unintentional injuries?

# Federal Government Activities

- A Boost for Children Ages 4 to 8
  - CDC funded state health depts in CO, KY, NY will implement community based programs for increasing booster seat usage
- Kids in the Back
  - CDC/HSPH intervention in low-income Hispanic community to increase number of children 12 and younger who ride properly in the back seat

# Federal Government Activities

- CDC/NIH study to examine effect of parents' actions on their teenager's driving behavior and MVAs.
- Three Tragic Seconds: A childhood drowning prevention program
  - CDC, Children's Hospital of Orange County, CA and National SAFE KIDS Campaign
  - Multimedia educational program to teach parents about drowning prevention.



# Federal Government Activities

- NHTSA – “Back to School Safely” Web site for children
  - [http://www.nhtsa.dot.gov/people/outreach/kidsPage/bussafety/bckschool\\_safely/index.html](http://www.nhtsa.dot.gov/people/outreach/kidsPage/bussafety/bckschool_safely/index.html)



**What existing policies and programs does the AMA have related to unintentional injuries?**



# AMA Policies Related to Unintentional Injuries

- **H-10.982 Injury Prevention**

- Our AMA (1) **supports the CDC's efforts** to (a) conduct research, (b) develop a national program of surveillance and focused interventions to prevent injuries, and (c) evaluate the effectiveness of interventions, implementation strategies, and injury prevention programs;
- (2) **supports a Public Health Service public information campaign** to inform the public and its policymakers of the injury problem and the potential for effective intervention;
- (3) **supports the development of a National Center for Injury Control at the CDC**; and
- (4) encourages state and local medical societies to support, in conjunction with state and local health departments, **efforts to make injury control a priority**, and advise the leadership of the United States Congress of this unqualified support; and the AMA remains open to working with all interested parties in efforts to deal with and lessen the effects of violence in our society. (Res. 410, A-92; Reaffirmed by BOT Rep. 19 - I-94; Reaffirmed by BOT Rep. 34, A-95; Modified and Reaffirmed by BOT Rep. 52, I-95; Reaffirmed: CSA Rep. 8, A-05)



# AMA Policies Related to Unintentional Injuries

- **H-10.996 Playground Equipment Labeling**
  - The AMA commends the Consumer Product Safety Commission for the intense and detailed attention given to the **study of playground injuries** and **offers its assistance in further educating the public to the relative hazard of injury** when paved surfaces are beneath such playground equipment as slides, swings, and climbers. (BOT Rep. T, I-80; Reaffirmed: CLRPD Rep. B, I-90; Reaffirmed: Sunset Report, I-00)



# AMA Policies Related to Unintentional Injuries

- **H-10.987 Use of Helmets in Bicycle Safety**
  - Our AMA (1) **supports appropriate efforts to educate parents and children about bicycle safety, including the use of bicycle helmets**, and (2) supports working with the American Academy of Pediatrics and other appropriate organizations to **ensure widespread distribution of information and educational materials about bicycle safety**, including the use of bicycle helmets, to both medical and non-medical audiences. (Sub. Res. 72, I-89; Reaffirmed: Sunset Report, A-00)

# AMA Activities

- Injury Prevention discussed on AMA's Web site: <http://www.ama-assn.org/ama/pub/category/2281.html>
- AMA Parent Package
  - Handouts for health professionals to share with parents and caregivers about making responsible choices in relation to unintentional injuries
- AMA's Office of Alcohol and Other Drug Abuse: Provides fact sheet on youth and alcohol, participates in nationwide campaigns
  - A Matter of Drinking: The National Effort to Reduce High-Risk Drinking Among College Students
  - Reducing Underage Drinking Through Coalitions: Youth and Adults United for Change



# What Can You Do?

- Sponsor a bicycle helmet drive at your local hospital.
- Sponsor a safety fair at your local hospital or shopping mall.
- Lobby your state government for stricter seatbelt and helmet laws.
- Teach a safety class to young children.
  - Lessons include crossing streets, seatbelts, stop/drop/and roll, etc.
- Incorporate safety practices in your medical interviewing and suggest interventions.



# More Resources

CDC's NCIPC Division of Unintentional Injury Prevention

<http://www.cdc.gov/ncipc/duip/duip.htm>

The Prevention Institute

<http://www.preventioninstitute.org/home.html>

Unintentional Injuries in Childhood: Analysis and Recommendations

[http://www.futureofchildren.org/usr\\_doc/Unintentional\\_Injuries.pdf](http://www.futureofchildren.org/usr_doc/Unintentional_Injuries.pdf)

Estimating Costs of Unintentional Injuries, 2003

<http://www.nsc.org/lrs/statinfo/estcost.htm>

Indian Health Service's Injury Prevention Project

<http://www.ihs.gov/MedicalPrograms/InjuryPrevention/index.cfm>

RWJF Cost of Injuries is High


<http://www.rwjf.org/reports/grr/030188.htm>



# Summary

- Unintentional Injuries are the leading cause of death in children and youth ages 1-18.
- Unintentional Injuries are PREVENTABLE
- The Haddon Matrix is a tool to help look for interventions for injury prevention.
- The AMA must continue to recognize unintentional injuries as an important public health problem.

# Bibliography

- 
- Brenner RA, Trumble AC, Smith GS, Kessler EP, Overpeck MD. Where children drown, United States, 1995. *Pediatrics* 2001; 108(1): 85–9.
- Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS) [Online]. (2004a). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (producer). Available from: URL: [www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars).
- Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS) [Online]. (2003). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (producer). Available from URL: [www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars).
- Department of Transportation (US), National Highway Traffic Safety Administration (NHTSA), Traffic Safety Facts 2003: Children. Washington (DC): NHTSA; 2004a. Available from URL: <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2003/809762.pdf>.
- Hoyert DL, et al. Deaths: Preliminary Data for 2003, National Vital Statistics Report, Volume 53, Number 15. February 28, 2005, pp 1-48.
- Insurance Institute for Highway Safety (IIHS). Fatality facts: teenagers 2002. Arlington (VA): The Institute; 2004 [cited 2004 Dec 13]. Available from: URL: [www.hwysafety.org/safety%5Ffacts/fatality\\_facts/teens.htm](http://www.hwysafety.org/safety%5Ffacts/fatality_facts/teens.htm).
- Litovitz TL, Klein-Schwartz W, White S, Cobaugh D, Youniss J, Omslaer J, Drab A, and Benson B. 2000 Annual Report of the American Association of Poison Control Centers Toxic Exposures Surveillance System. *American Journal of Emergency Medicine*, 19(5): 337 – 396; 2001.
- Miller TR, et al. The Cost of Childhood Unintentional Injuries and the Value of Prevention. *Unintentional Injuries in Childhood*. Volume 10, Number 1 – Spring/Summer 2000.
- NHTSA. Traffic Safety Facts: 2003 Data. DOT HS 809 762. <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2003/809762.pdf>
- Shults RA. Child passenger deaths involving drinking drivers—United States, 1997–2002 [published erratum appears in *MMWR* 2004; 53(5):109]. *MMWR* 2004; 53(4): 77–9.
- Taft CH, Mickalide AD, Taft AR. Child passengers at risk in America: a national study of car seat misuse. Washington (DC): National SAFE KIDS Campaign; 1999.
- Thompson, Robert. A Case Control Study of the Effectiveness of Bicycle Safety Helmets, CDC
- Tinsworth D, McDonald J. *Special Study: Injuries and Deaths Associated with Children's Playground Equipment*. Washington (DC): U.S. Consumer Product Safety Commission; 2001.

